

WHAT IS CLAIMED IS:

1. A catheter assembly comprising:

a needle hub comprising a proximal end, a distal end, an exterior surface and an interior surface defining an interior cavity;

a needle attached to the distal end of the needle hub comprising a needle tip and a needle axis;

a catheter hub comprising a proximal end, a distal end, an exterior surface and an interior surface defining an interior cavity;

a catheter tube comprising a lumen attached to the distal end of the catheter hub;

a protective clip comprising a resilient arm and a proximal wall comprising an opening sized to accommodate the needle, the opening comprising a circumferential rim comprising an upper rim portion and a lower rim portion;

a ready to use position in which the catheter hub is removeably engaged to a nose section of the distal end of the needle hub and the needle projected into the lumen of the catheter tube and defining a holding space bounded by the interior cavity of the catheter hub and a portion of the nose section of the needle hub; the protective clip being positioned in the holding space with a portion associated with the resilient arm of the protective clip contacting an engagement surface on the interior cavity of the catheter hub;

a retracted position in which the catheter hub is disengaged from the nose section of the needle hub, the portion associated with the resilient arm of the protective clip no longer contacting the engagement surface on the interior cavity of the catheter hub, and the distal wall of the protective clip positioned at an angle to the axis of the needle such that the needle contacts the upper rim portion and the lower rim portion of the circumferential rim to frictionally cooperate with the circumferential rim.

2. The catheter assembly of claim 1, wherein the resilient arm is integrally formed with the proximal wall.

3. The catheter assembly of claim 1, wherein the protective clip further comprises a second resilient arm comprising an opening.

4. The catheter assembly of claim 3, wherein the second resilient arm extends from the proximal wall and the resilient arm extends from the second resilient arm.
5. The catheter assembly of claim 4, wherein the resilient arm comprises a hook member.
6. The catheter assembly of claim 5, wherein the hook member abuts the needle.
7. The catheter assembly of claim 3, wherein the opening of the second resilient arm comprises a circumferential rim comprising an upper rim portion and a lower rim portion.
8. The catheter assembly of claim 7, wherein the needle contacts the upper rim portion and the lower rim portion of the circumferential rim of the second resilient arm to frictionally cooperate with the circumferential rim in the retracted position.
9. The catheter assembly of claim 1, further comprising a metallic tubular member coaxially disposed with the catheter tube.
10. The catheter assembly of claim 1, wherein the needle comprises a single generally uniform diameter.
11. The catheter assembly of claim 1, wherein the catheter hub comprises a Luer connector.
12. The catheter assembly of claim 1, wherein the proximal wall comprises a end edge abutting the interior surface of the interior cavity of the catheter hub.
13. A catheter assembly comprising a needle hub having an exterior surface and a needle having a needle tip attached thereto removeably engaged to a first portion of an interior cavity of a catheter hub comprising a catheter tube extending distally from the catheter hub with

the needle extending through the catheter tube and the needle tip extending beyond the catheter tube;

a needle protective clip comprising a proximal wall having an opening and a resilient portion positioned in the interior cavity of the catheter hub having the needle passing through the opening and the resilient portion biased by the needle, the opening comprising a circumferential rim comprising an upper rim portion and a lower rim portion;

wherein a second portion of the interior cavity of the catheter hub is removeably engaged to a portion of the needle protective clip such that the needle protective clip is retained within the cavity of the catheter hub by the engagement when the needle is retracted from the catheter tube by moving the needle hub proximally relative to the catheter hub; and

wherein the needle protective clip is separable from the catheter hub when the needle tip enters the interior cavity of the catheter hub and the resilient portion of the needle protective clip is unbiased by the needle; whereupon further withdrawing of the needle further separates the second portion of the interior cavity of the catheter hub from the portion of the needle protective clip and the needle to contact the upper rim portion and the lower rim portion of the circumferential rim to frictionally cooperate with the circumferential rim.

14. The catheter assembly of claim 13, wherein the resilient portion is integrally formed with the proximal wall.

15. The catheter assembly of claim 13, wherein the resilient portion comprises a hook portion abutting the needle.

16. The catheter assembly of claim 13, wherein the protective clip further comprises a second resilient portion comprising an opening.

17. The catheter assembly of claim 16, wherein the second resilient portion extends from the proximal wall and the resilient portion extends from the second resilient portion.

18. The catheter assembly of claim 17, wherein the opening of the second resilient portion comprises a circumferential rim comprising an upper rim portion and a lower rim portion.

19. The catheter assembly of claim 18, wherein the needle contacts the upper rim portion and the lower rim portion of the circumferential rim of the second resilient portion to frictionally cooperate with the circumferential rim in the retracted position.

20. The catheter assembly of claim 13, wherein the catheter hub comprises a Luer lock.

21. The catheter assembly of claim 13, wherein the needle hub further comprises a nose portion and wherein the needle attaches to the nose portion of the needle hub.

22. The catheter assembly of claim 21, wherein the nose portion comprises an exterior surface and wherein the interior cavity of the catheter hub is in contact with the exterior surface of the nose portion.

23. The catheter assembly of claim 13, wherein the needle hub comprises an interior surface defining an interior cavity.

24. The catheter assembly of claim 23, wherein a proximal end of the needle extends into the interior cavity of the needle hub.

25. The catheter assembly of claim 13, wherein the second portion of the interior cavity of the catheter hub engaged to the needle clip comprises a groove.

26. The catheter assembly of claim 25, wherein the groove is an annular groove.

27. A catheter assembly comprising a catheter hub having a catheter tube extending from a distal end thereof, the catheter tube comprising a lumen and a distal end and the catheter

hub comprising an interior cavity comprising an interior surface having a clip engagement wall surface formed thereon;

a needle hub having a needle attached to a distal end thereof comprising a needle tip;

a ready position in which the needle extends through the lumen of the catheter tube and the needle tip extends beyond the distal end thereof;

a retracted position in which the needle moves proximally relative to the catheter hub and the needle tip is at a position within the interior cavity of the catheter hub;

a needle protective clip comprising a proximal wall having an opening, a resilient member comprising a needle distally blocking member, and an engagement segment for retaining the needle protective clip to the catheter hub during movement of the needle between the ready position and the retracted position, the opening comprising a circumferential rim comprising an upper rim portion and a lower rim portion;

wherein when the needle is in the ready position, the needle protective clip is positioned over the needle in the interior cavity of the catheter hub and the needle passes through the opening of the proximal wall; the resilient portion is biased by a side of the needle; and the engagement segment is engaged to the clip engagement wall surface of the interior surface of the catheter hub;

wherein when the needle moves from the ready position towards the retracted position, the clip engagement wall surface of the catheter hub and the engagement segment on the needle protective clip interact to prohibit relative movement between the catheter hub and the needle protective clip until the needle moves proximally of the needle distally blocking member whereupon the resilient member is no longer biased by the side of the needle, the needle distally blocking member moves to block the needle tip, and, whereupon further needle movement, the needle protective clip separates from the catheter hub and the needle contact the upper rim portion and the lower rim portion of the circumferential rim to frictionally cooperate with the circumferential rim.

28. The catheter assembly of claim 27, wherein the resilient member and the engagement segment of the protective clip are integrally formed with the proximal wall.

29. The catheter assembly of claim 27, wherein the clip engagement wall of the interior surface of the catheter hub comprises a groove.

30. The catheter assembly of claim 29, wherein the groove is annular.